INDUSTRIAL RESEARCH LIMITED

Industrial Research Limited
Statement of Corporate Intent

1 July 2008 to 30 June 2011

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1 INTRODUCTION

This statement is submitted by the Board of Directors of Industrial Research Ltd (IRL) in accordance with section 16 of the Crown Research Institutes Act 1992 (the Act). It sets out the Boards overall intentions and objectives for the company to 30 June 2009 and the two succeeding financial years, as required by the Act.

2 VISION, VALUES AND STRATEGY

2.1 *Vision*

Industrial Research Limited (IRL) is a Crown Research Institute using world-class research and advanced technology to transform industry and add value to New Zealand's economy.

In three years time IRL will be:

- Contributing significantly to the transformation of New Zealand manufacturing through close working partnerships with the leading industry innovators.
- Financially sustainable with a cost structure and expanded revenue base that allows the organisation and its shareholder to invest in its future with confidence.
- A highly performing Crown Research Institute with the physical resources, depth of skills and commitment to teamwork that delivers effectively against its objectives.

2.2 *Values*

The values and beliefs we live by in IRL are:

IMPACT: We are committed to New Zealanders' wellbeing through the application of our research; and are open to new ideas and novel ways to apply our science and technology.

ENGAGEMENT: We will go beyond customer service to understand and engage with industry and our partners to identify, develop and deliver the technology our clients need to prosper.

PROFESSIONALISM: We strive, individually and collectively for the highest standards in performance and integrity, and continually advance the quality of our operations. We will deal honestly and directly with our colleagues and clients, building a high-trust climate in which to work.

2.3 *Strategic Priorities*

Our strategy involves four goals critical to the successful achievement of our purpose.

- To engage with industry more effectively, and in novel ways to deliver research solutions and exploit technological opportunities
- To grow our research, development and application excellence

- To achieve organisational sustainability through sound financial management: diversifying our revenue; operating efficiently and effectively; and timely investment in equipment and infrastructure
- To effectively execute our strategy by doing what we say, on budget and on time

3 SCOPE AND NATURE OF ACTIVITIES

IRL operates In accordance with the purpose and principles of the operation of Crown Research Institutes as set out in Sections 4 and 5 of the Act. We support the New Zealand industrial and manufacturing sector by using our scientific and engineering capabilities to carry out research and development projects to enhance business performance and generate new industries. Our work adds value in three different business areas:

- sustaining the value of the client's core business (short term),
- supporting the client's business expansion (medium term), and
- creating and developing new business domains and thereby initiating new industries (long term).

IRL also maintains the nation's standards of measurement.

IRL conducts a full range of research activities from theoretical to applied, with a weighting towards the strategic and applied end of the spectrum. The research is carried out under contracts gained in a competitive environment in the public and private sectors in New Zealand, and where appropriate to IRL's mission, overseas.

Industry sectors on which IRL focuses its activities are:

- Specialty Manufacture
- Energy Production and Distribution
- BioManufacture
- Specialist Food processing
- Communications
- Construction and Engineering

IRL actively seeks opportunities to contribute to Maori Industry in these sectors.

IRL applies the following areas of science and technological capability to these sectors:

- Chemistry
- Process Engineering
- Materials
- Design & Prototyping
- Electronics
- Communications Networks
- Energy
- Mathematics
- Measurement

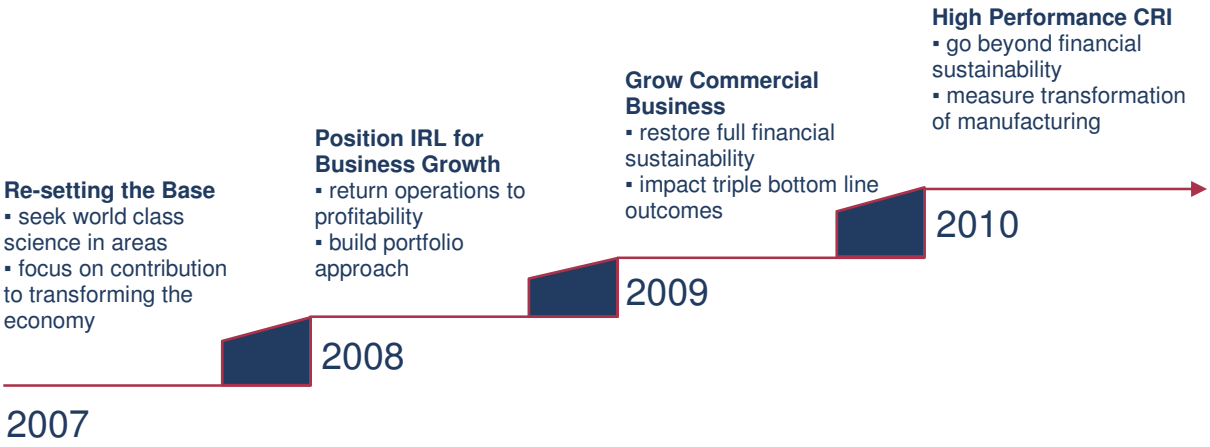
4 OBJECTIVES

Principal objectives of IRL are to:

- Undertake research for the benefit of New Zealand:
- Comply with any applicable ethical standards in carrying out its activities
- Promote and facilitate the application of the results of research and technological developments
- Be a good employer as defined by section 118 of the Crown Entities Act 2004
- Exhibit a sense of social responsibility by having regard to the interests of the community in which it operates and by endeavouring to accommodate or encourage those interests when able to do so.
- Operate in a financially responsible manner so that it maintains its financial viability.

Consistent with the letter of expectation from the Minister of Research Science and Technology, IRL has placed particular emphasis since 2007 on engaging effectively with industry. IRL will continue to facilitate technology transfer to industry via a range of interactions, eg partnerships, joint ventures, fee for service research, workshops and spill-in of offshore sourced technology.

To be successful in transforming New Zealand industry, IRL must follow a disciplined path, with strong support from its shareholder and primary funder, FRST. The following diagram summarises the business model being used. It deliberately and explicitly foreshadows a transition from operational and financial consolidation to a more aggressive marketing stance and profitable outcomes characteristic of a high performing CRI:



5 GOOD EMPLOYER STATEMENT

Industrial Research Ltd (IRL) is a repository of scientific capability that is world class. In order to maintain and extend this capability, IRL must be a preferred employer within its relevant scientific domains.

As part of being a preferred employer IRL will have a reputation as a "good employer". In order to be a "good employer" Industrial Research Ltd will meet, if not exceed, its good employer obligations, as required by the Crown Research Institute Act, 1992 and the Crown Entities Act, 2004.

IRL will demonstrate that its employees are valued by treating them fairly and properly in all aspects of their employment.

IRL will apply best practice human resource polices. Its people policies and processes will concentrate on attracting, developing and retaining talented staff.

The selection of employees will be impartial and the best suited person will be appointed.

Individual performance will be recognised and rewarded.

There will be opportunities for the enhancement of the abilities of individual employees through professional development, career development, and quality coaches and mentors will be made available either from within IRL or from outside.

IRL will be responsive to the employment requirements of Maori, their aims and aspirations and the need for the involvement of Maori as employees.

IRL will apply the principles of equal employment opportunity. The EEO programme will be an active one that recognises

- the different aims, aspirations and the cultural differences of other ethnic and minority groups within its workforce
- the special employment requirements of women
- the employment requirements of persons with disabilities.

The EEO programme will be made available to all employees.

The work environment will be healthy, safe and free of harassment of any kind, be it racial, sexual or of a bullying nature.

Employees will be encouraged to maintain a work life balance.

IRL will develop and make available a positive aging strategy with flexible working arrangements so that employees nearing retirement may do so on a gradual basis.

6 SUSTAINABILITY POLICY

IRL has embraced the government's prioritisation of environmental sustainability as an important goal for Crown agencies. Sustainability is central to IRL's operations, and is reflected in research work programmes, eg distributed energy. IRL strives to achieve the goal of environmental sustainability in all aspects of our research activities.

IRL incorporates and promotes sustainability throughout its operations. While these policy principles apply to all sites the different zoning of Gracefield vis a vis Auckland and Christchurch sites, means that in practice, some are more specific to Gracefield:

1. IRL saves and makes the most effective use of energy, by:

a. using building insulation
b. effective use of electricity supply through voltage smoothing, load shedding and automatic peak load minimisation
c. turning off electrical devices when not required
d. applying a building management system where energy demanding equipment is required outside core hours
e. applying a detailed but flexible plant and equipment shutdown policy over long holiday periods
f. downsizing the IRL vehicle fleet
g. using video linkages where appropriate in lieu of air travel
h. maintaining our membership and adhering to the principles of EECA's Energywise Company scheme.

2. **IRL saves and makes the most effective use of water, by:**
    a. using appropriate technology to avoid unnecessary usage of water
    b. recycling some water used in industrial processes through cooling towers
    c. avoiding water pollution through careful liquid disposal practices
    d. maintaining up to date contingency plans for any accidental discharges of pollutants.

3. **IRL protects the environment through taking care in the use and disposal of waste substances, and the release of emissions, by:**
    a. Careful, segregated storage of dangerous goods and containment of biological materials
    b. containing liquid chemical waste in holding tanks, treating it, and testing it, before releasing it through approved trade waste outlets
    c. disposing of any dangerous chemicals and asbestos via licensed specialist companies
    d. maintaining spill-kits and solvent recovery drums on-site for containing any spillage or leaking containers
    e. recycling solvents used in laboratories, together with paper and cardboard, glass and plastics
    f. investigating responsible disposal of computers and computer screens
    g. minimising toxic content of emissions into the air
    h. working proactively with our suppliers to maximise the purchase of those goods and services that are produced using sustainable practices.

4. **IRL complies with relevant laws and regulations of central and local government, by:**
    a. monitoring laws and regulations that apply to IRL's operations
    b. adhering to requirements of Hutt City Council land usage zoning, including emissions standards
    c. adhering to national laws and regulations, and requiring our tenants to contract with IRL to be environmentally responsible and comply with environmental laws and regulations
    d. co-operating with Police instructions in ensuring that our sites are secure to prevent risk of theft of items for illicit drug manufacture
    e. periodically having an independent review of our security

5. **IRL demonstrates the principles of sustainability in our wider governance and management, by:**

a. maintaining our financial viability
b. measuring, reporting on and periodically auditing our performance against key sustainability objectives
c. providing a safe and healthy environment for our staff
d. involving our staff in sustainability issues through our individual site Health Safety and Environment Committees
e. encouraging staff to reduce their environmental impacts through sustainable work practices
f. developing and implementing a site planting programme, including planting of threatened species.

7 ACCOUNTING POLICIES

IRL has adopted the accounting policies recognised by the Institute of Chartered Accountants of New Zealand as appropriate for the measurement and reporting of earnings and financial position, and complies with the relevant provisions in the Financial Reporting Act 1993. Details of the accounting policies and their application are contained in Appendix 1.

8 RATIO OF CONSOLIDATED SHAREHOLDER'S FUNDS AND PERFORMANCE TARGETS

8.1 *Financial*

The financial objective for Industrial Research is based around the principles of the CRI Act. Industrial Research must maintain financial viability, i.e. achieve an adequate return on Shareholders funds and be a successful going concern.

Shareholders funds include shares, reserves and retained earnings. The estimated value of the Crown investments is represented by the forecast levels of shareholders funds

Measure	**2009**	**2010**	**2011**
Forecast Revenues	56,592	63,768	67,932
EBIT	1,169	3,044	4,086
NPAT	454	2,413	3,606
Net Profit margin	0.8%	3.8%	5.3%
Return on Capital	21.8%	26.8%	28.4%
Current Ratio	64.5%	68.4%	85.2%
Liquid Ratio	64.5%	68.4%	85.2%
Return on Net Assets	3.5%	8.5%	10.3%
Interest Cover	163.1%	482.5%	850.6%
Gross Gearing	16.2%	13.0%	4.8%
Opening Shareholders Funds	28,539	33,491	35,905
Closing Shareholders Funds	33,491	35,905	39,510
AV Shareholder Funds	31,743	34,883	37,825
EBIT to AV SH Funds	3.67%	8.72%	10.8%
Total Assets	53,968	57,036	57,438
Shareholders Funds to Total Assets	62.1%	63.0%	68.8%
Total Full Time Equivalents	345	365	380
Revenue Per FTE	164	175	179

8.2 *Key Performance Indicators*

Strategy: To engage with industry more effectively, and in novel ways to deliver research solutions and exploit technological opportunities

Indicator	Definition	FY 2009	FY2010	FY2011
High potential companies identified and engagement strategies developed	Identification completed, operational plans agreed for 08/09 activities	5	7	10
New Patents granted in New Zealand	Number – new	10	14	14
New Patents granted Overseas	Number – new	20	25	25
Licensing arrangements entered into	Number – new	8	10	10
Joint ventures or formal associations	Number – new	5	5	5
Commissioned reports to users	Number – total	Based to be established post-contracting with FRST(expected Sept 09)		
Start-up companies Spin-off Spin-out	Number	1	1 1	1
Customer satisfaction	Satisfaction as expressed in surveys, and post-project reviews	To satisfaction of Board		

Strategy: To grow our research, development and application excellence

Indicator	Definition	FY 2009	FY2010	FY2011
Number of Peer Reviewed Articles and Publications	Number	160	190	200
Keynote and plenary presentations	Number	60	80	80
Publications on technical information and research results	Number	50	60	60
Presentations on technical information and research	Number	60	65	70
Visiting Scientists (self-funded)	Visits over 3 months	10	10	10
Establish Project selection and Management processes	Project Management system revised and adopted	April 2009		
Succession – Science and Engineering	Succession Plan in place for all key positions in Science and Engineering	Plan to satisfaction of Board	Plan to satisfaction of Board	Plan to satisfaction of Board
Succession - Execution	Succession Plan for Executive Management position	Plan to satisfaction of Board	Plan to satisfaction of Board	Plan to satisfaction of Board

Strategy: To achieve organizational sustainables

Indicator	Definition	FY 2009	FY2010	FY2011
Revise long term capital equipment investment schedule	Plan endorsed by Board Updated annually	May 2009		
Establish long term site site/ Location development plans	Plan endorsed by Board Updated annually	Nov 2008		
Revenue	Revenue/budget	Budget	Budget	Budget
EBIT	EBIT/budget	Budget	Budget	Budget
Cash flow	Operating cash flow			
Staff/HR development	Health and Safety compliance	100%	100%	100%
Staff Satisfaction	Annual staff survey	8% improvement (08/09)	15% improvement	15% improvement
Capital Investment	Equal to budget	Budget	Budget	Budget
Involvement in COREs, R&D Consortia etc.	Number - new	3	7	7
R&D Joint Venture	Number - new	2	4	4
Successful Funding Bids	% of bids awarded	>50% of initial bids	>50% of initial bids	>70% of initial bids
Full time employees	Research Teams	222	230	250
	Research Support	24	26	30
	Other Support	60	60	65

Strategy: To effectively deliver our mission

Indicator	Definition	FY 2009	FY2010	FY2011
Revise comprehensive performance management	Balanced operational scorecard	May 2009	N/A	N/A
Review standard operating procedures and management information systems	Ongoing needs established and investment / development schedule agreed	- Progressive through year	N/A	N/A
Establish operational planning mechanisms	High-level operational plan in existence	Progressive through year		

8.3 *Financial Objectives*

The financial objective for Industrial Research is based around the principles of the CRI Act. Industrial Research must maintain financial viability, i.e. achieve an adequate return on shareholders funds and be a successful going concern.

9 DIVIDEND POLICY

Taking into account the Government's stated policy, it is intended that all funds surplus to the company's investment and operating requirements will be distributed to the shareholders.

In determining surplus funds, consideration will be given to:

- Providing for capital investment requirements without recourse to the Crown for equity injections
- Retirement of debt
- IRL's working capital requirements
- The on-going financial viability of the company

The Board will detail in a submission to Ministers, within two months of the end of each financial year:

- The amount of dividend (if any) to be distributed to the shareholders Note: dividend not expected for the next 2 years)
- The percentage of tax-paid profits that the dividend represents
- The rationale and analysis used to determine the amount of the dividend

10 INFORMATION TO BE REPORTED

The quarterly reports will report financial performance for the quarter and year to date against business plan budgets, provide updated end of year forecasts, and provide a commentary on performance for the period. The commentary will focus on any material variances and how these will be addressed.

IRL will provide to the Shareholding Ministers an Annual Report in accordance with Section 17 of the Act and Part V of the Public Finance Act 1989 (as amended). IRL will also report on the achievement of the objectives and targets set out in this Statement of Corporate Intent. In addition, the Annual Report will contain an audited statement detailing compliance with the Government's policy of not guaranteeing Crown Research Institute loans.

The half-yearly report, submitted in accordance with Section 18 of the Act, will include unaudited statements of Financial Performance, Financial Position, Cashflows, as well as an analysis of actual performance against stated objectives and performance targets, together with a Forward Outlook and such other details as are necessary to permit an informed assessment of the company's performance during the reporting period.

In accordance with Section 20 of the Act, IRL will provide other information relating to the affairs of the company as requested by the Shareholding Ministers.

11 PROCEDURES FOR SHARE SUBSCRIPTIONS OR PURCHASES

The Board will obtain prior written consent of shareholding Ministers for any transaction or series of transactions involving full or partial acquisition, disposal or modification of property (buildings, land and capital equipment) and other assets with a value equivalent to or

greater than $10 million or 20% of a company's total assets (prior to the transaction), whichever is the lesser.

The Board will obtain prior written consent of shareholding Ministers for any transaction or series of transactions with a value equivalent to or greater than $5 million or 30% of a company's total assets (prior to the transaction) involving:

- acquisition, disposal or modification of an interest in a joint venture, or partnership, or other similar association
- acquisition or disposal in full or in part, of shares or interests in a subsidiary's ownership of another entity
- transactions that affect the company's ownership of a subsidiary or a subsidiary's ownership of another entity
- other transactions that fall outside the scope of the definition of the company's core business or that may have a material effect on the company's science capabilities.

The Board will advise shareholding Ministers in writing before entering into any material transaction related to property and commercialisation activities below this threshold.

12 ACTIVITIES FOR WHICH COMPENSATION IS SOUGHT

Where the Government wishes the company to undertake activities or assume obligations which will result in a reduction of the company's profit or net worth in terms of its investment in research, the Board will seek compensation sufficient to allow the company's position to be restored.

No requests for compensation are currently under consideration.

13 OTHER MATTERS SPECIFICALLY REQUESTED BY THE SHAREHOLDER

IRL has received no instructions from its shareholder. However, we have received a letter from the Shareholding Minister stressing the need for IRL to engage more intensively with industry. This emphasis is recognised in both this Statement of Corporate Intent, and also as a key opportunity and theme in the company's Strategic Plan.

APPENDIX 1 - STATEMENT OF ACCOUNTING POLICIES

1 CORPORATE INFORMATION

The financial statements of Industrial Research Limited Group are for the year ended 30 June 2008.

Industrial Research Limited is a limited liability entity registered under the Companies Act 1993 incorporated and domiciled in New Zealand. The address of the registered office is Gracefield Research Centre, 69 Gracefield Road Lower Hutt.

The nature of the operations and principal activities of the Group are described in note 26, Segment Information.

These consolidated financial statements have been approved for issue by the Board of Directors on 20 May 2008.

The entities owners do not have the power to amend these financial statements once issued.

Basis of preparation

The financial statements have been prepared in accordance with generally accepted accounting practice in New Zealand and the requirements of the Companies Act 1993, the Financial Reporting Act 1993, the Crown Entities Act 2004 and the Crown Research Institutes Act 1993. The financial statements have also been prepared on a historical cost basis, except for available-for-sale financial assets that have been measured at fair value.

The financial statements are presented in New Zealand dollars and all values are rounded to the nearest thousand dollars ($'000).

(a) Standards adopted early by the group
No standards have been adopted by the group before the effective date of the standards.

(b) Standards amendments and interpretations effective in 2007 but not relevant
The following standards, amendments and interpretations to published standards are mandatory to accounting periods beginning on or after 1 January 2007 but they are not relevant to the group's operations:

- IFRS 4 Insurance contracts
- IFRIC 7 Applying the restatement approach under IAS 29 Financial reporting in hyper inflationary economies
- IFRIC 9 Re-assessment of embedded derivatives
- IFRIC 11 Group and treasury share transactions.

(c) Standards, amendments and interpretations to existing standards that are not yet effective and have not been early adopted by the group
The following standards, amendments and interpretations to existing standards have been published and are mandatory for the group's accounting periods beginning on or after 1 January 2008 or later periods, but the group has not early adopted them:

- IAS 23 (amendment), `Borrowing costs'(effective from 1 January 2009). The amendment to the standard is still subject to endorsement by the European Union. It requires an entity to capitalise borrowing costs directly attributable to the acquisition, construction or production of a qualifying

asset (one that takes a substantial period of time to get ready for use or sale) as part of the cost of that asset. The option of immediately expensing those borrowing costs will be removed. The group will apply IAS 23 (Amended) from 1 January 2009 but is currently not applicable to the group as there are no qualifying assets.

- IFRS 8, `Operating segments' (effective from 1 January 2009). IFRS 8 replaces 1AS 14 and aligns segment reporting with the requirements of the US standard SFAS 131, `Disclosures about segments of an enterprise and related information'. The new standard requires a `management approach', under which segment information is presented on the same basis as that used for internal reporting purposes. The group will apply IFRS 8 from 1 January 2009. The expected impact is still being assessed in detail by management, but it appears likely that the number of reportable segments, as well as the manner in which the segments are reported, will change in a manner that is consistent with the internal reporting provided to the chief operating decision-maker.

(d) Interpretations to existing standards that are not yet effective and not relevant for the group's operations

The following interpretation to existing standards have been published and are mandatory for the group's accounting periods beginning on or after 1 January 2008 or later periods but are not relevant for the group's operations:

- IFRIC 14, `IAS 19 – The limit on a defined benefit asset, minimum funding requirements and their interaction' (effective from 1 January 2008). IFRIC 14 provides guidances on assessing the limit in IAS 19 on the amount of the surplus that can be recognised as an asset. It also explains how the pension asset or liability may be affected by a statutory or contractual minimum funding requirement. IFRIC 14 is not expected to have any impact on the group's accounts.
- IFRIC 12, `Service concession arrangements' (effective from 1 January 2008). IFRIC 12 applies to contractual arrangements whereby a private sector operator participates in the development, financing, operation and maintenance of infrastructure for public sector services. IFRIC 12 is not relevant to the group's operations.
- IFRIC 13, 'Customer loyalty programmes' (effective from 1 July 2008). IFRIC 13 clarifies that where goods or services are sold together with a customer loyalty incentive (for example, loyalty points or free products), the arrangement is a multiple-element arrangement and the consideration receivable from the customer is allocated between the components of the arrangement in using fair values. IFRIC 13 is not relevant to the group's operations because none of the group's companies operate any loyalty programmes.

Statement of compliance

The financial statements comply with Applicable Financial Reporting Standards, which include New Zealand equivalents to International Financial Reporting Standards ('NZ IFRS'). Compliance with NZ IFRS ensures that the financial statements comply with International Financial Reporting Standards ('IFRSs').

This is the first set of financial statements prepared based on NZ IFRS and comparatives for the period ended 30 June 2008 have been restated accordingly. Reconciliations of previously reported equity under NZ FRS as at 30 June 2007 and 30 June 2006, and net deficit as at 30 June 2007 to the balances reported in the 30 June 2008 financial statements are detailed in note 2 below.

Basis of consolidation

The consolidated financial statements comprise the financial statements of Industrial Research Limited and its subsidiaries, associates and joint ventures as at 30 June each year ('the Group').

The financial statements of subsidiaries are prepared for the same reporting period as the parent company, using consistent accounting policies.

All inter-company balances and transactions, including unrealised profits arising from intra-group transactions, have been eliminated in full. Unrealised losses are also eliminated but considered an impairment indicator of the asset transferred.

Where there is loss of control of a subsidiary, the consolidated financial statements include the results for the part of the reporting year during which Industrial Research Limited has control.

The purchase method is used to account for the acquisition of subsidiaries by the Group. The cost of an acquisition is measured at fair value of the assets given and liabilities incurred at the date of exchange. Identifiable assets and liabilities assumed in a business combination are measured initially at their fair value at the acquisition date.

Investment in associate

Associates are all entities over which the Group has significant influence but not control, generally accompanying a shareholding of between 20% and 50% of the voting rights.
The group investment in associates is accounted for under the equity method of accounting in the consolidated financial statements.

The financial statements of the associate are used by the Group to apply the equity method. The reporting dates of the associate and the Group are identical and both use consistent accounting policies.

The investment in the associate is carried in the balance sheet at cost plus post-acquisition changes in the Group's share of net assets of the associate, less any impairment in value. The consolidated income statement reflects the Group's share of the results of operations of the associate.

Where there has been a change recognised directly in the associate's equity, the Group recognises its share of any changes and discloses this, when applicable in the consolidated statement of changes in equity.

Interest in joint venture operation

The Group’s interest in jointly controlled entities is accounted for by proportionate consolidation. The Group combines its share of the joint ventures individual income and expenses, assets and liabilities and cash flow on a line by line basis with similar items in the Group financial statements.

Foreign currency translation

Both the functional and presentation currency of Industrial Research Limited and its subsidiaries is New Zealand dollars ($).

Transactions in foreign currencies are initially recorded in the functional currency at the exchange rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the rate of exchange ruling at the balance sheet date.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate as at the date of the initial transaction.

Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

As at the reporting date the assets and liabilities of overseas subsidiaries are translated into the presentation currency of Industrial Research Limited at the rate of exchange ruling at the balance sheet date and the income statements are translated at the weighted average exchange rates for the year.

The exchange differences arising on the retranslation are taken directly to a separate component of equity.

On disposal of a foreign entity, the deferred cumulative amount recognised in equity relating to that particular foreign operation is recognised in the income statement.

Property, plant and equipment

Land, buildings plant and equipment is stated at cost less accumulated depreciation and any impairment in value. Historical cost includes expenditure that is directly attributable to the acquisition of the items. Subsequent costs are included in the assets carrying value only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably.

Depreciation is calculated on a straight-line basis to allocate their cost to their residual values over the estimated useful life of the asset as follows:

	Estimated useful life	Depreciation basis
Land is not depreciated		
Freehold buildings	10 to 40 years (dependent on age)	Straight line
Building auxiliary services	10 to 20 years	Straight line
Computer equipment	4 years	Straight line
Plant and scientific equipment	5 to 12 years	Straight line
Motor vehicles	4 years	Straight line
Office furniture, fittings and equipment	5 years	Straight line

Impairment

The carrying values of plant and equipment are reviewed for impairment when events or changes in circumstances indicate the carrying value may not be recoverable.

For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

If any such indication exists and where the carrying values exceed the estimated recoverable amount, the assets or cash-generating units are written down to their recoverable amount. Impairment losses are recognised in the income statement.

The recoverable amount of plant and equipment is the greater of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the item) is included in the income statement in the year the item is derecognised.

Borrowing costs

Borrowing costs are recognised as an expense when incurred.

Intangible assets

(a) Acquired both separately and from a business combination

Intangible assets acquired separately are capitalised at cost and from a business combination are capitalised at fair value as at the date of acquisition. Following initial recognition, the cost model is applied to the class of intangible assets.

The useful lives of these intangible assets are assessed to be either finite or indefinite.

Where amortisation is charged on assets with finite lives, this expense is taken to the income statement through the 'amortisation of intangible assets' line item.

Intangible assets, excluding development costs, created within the business are not capitalised and expenditure is charged to the income statement in the year in which the expenditure is incurred.

Intangible assets are tested for impairment where an indicator of impairment exists, and in the case of indefinite lived intangibles annually, either individually or at the cash generating unit level. Useful lives are also examined on an annual basis and adjustments, where applicable, are made on a prospective basis.

(b) Research and development costs

Research costs are expensed as incurred.

Development expenditure incurred on an individual project is carried forward when its future recoverability can reasonably be regarded as assured.

Following the initial recognition of the development expenditure, the cost model is applied requiring the asset to be carried at cost less any accumulated amortisation and accumulated impairment losses.

Any expenditure carried forward is amortised over the period of expected future sales from the related project.

The amortisation period and amortisation method for development costs is reviewed at each financial year-end. If the useful life or method of consumption is different from the previous assessment, changes are made accordingly. The carrying value of development costs is reviewed for indicators of impairment annually.

(c) Computer software

Acquired computer software licenses are capitalised on the basis of the costs incurred to acquire and right to use the specific software.
Computer software development costs recognised as assets are amortised over their estimated useful lives (not exceeding 3 years).

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognised in the income statement when the asset is derecognised.

(l) Recoverable amount of non-current assets

At each reporting date, the group assesses whether there is any indication that an asset may be impaired. Where an indicator of impairment exists, the Group makes a formal estimate of recoverable amount. Where the carrying amount of an

asset exceeds its recoverable amount the asset is considered impaired and is written down to its recoverable amount.

Recoverable amount is the greater of fair value less costs to sell and value in use. It is determined for an individual asset, unless the asset's value in use cannot be estimated to be close to its fair value less costs to sell and it does not generate cash inflows that are largely independent of those from other assets or groups of assets, in which case, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

Financial Assets

Investments
All investments are initially recognised at cost, being the fair value of the consideration given and, in the case of an investment not at fair value through the income statement, including acquisition charges associated with the investment.

After initial recognition, investments which are classified as at fair value through the income statement and available-for-sale, are measured at fair value. Gains or losses on investments classified as at fair value through profit or loss are recognised in the income statement.

Available for sale investments
Gains or losses on available-for-sale investments are recognised as a separate component of equity until the investment is sold, collected or otherwise disposed of, or until the investment is determined to be impaired, at which time the cumulative gain or loss previously reported in equity is included in the income statement.

Held to maturity investments
Non-derivative financial assets with fixed or determinable payments and fixed maturity are classified as held-to-maturity when the Group has the positive intention and ability to hold to maturity. Investments intended to be held for an undefined period are not included in this classification.

Other long-term investments that are intended to be held-to-maturity, such as bonds, are subsequently measured at amortised cost using the effective interest method.

Amortised cost is calculated by taking into account any discount or premium on acquisition, over the period to maturity.

For investments carried at amortised cost, gains and losses are recognised in income when the investments are derecognised or impaired, as well as through the amortisation process.

For investments that are actively traded in organised financial markets, fair value is determined by reference to Stock Exchange quoted market bid prices at the close of business on the balance sheet date.

For investments where there is no quoted market price, fair value is determined by reference to the current market value of another instrument which is substantially the same or is calculated based on the expected cash flows of the underlying net asset base of the investment.

Purchases and sales of financial assets that require delivery of assets within the time frame generally established by regulation or convention in the market place are recognised on the trade date i.e. the date that the Group commits to purchase the asset.

Inventories

Inventories are valued at the lower of cost and net realisable value.

Costs incurred in bringing each item to its present location and condition are accounted for as follows:

- Raw materials – purchase cost on a first-in, first-out basis;
- Work-in-progress – cost of direct materials and labour and a proportion of manufacturing overheads based on normal operating capacity but excluding borrowing costs.

Net realisable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

Trade and other receivables

Trade receivables, which generally have 30-90 day terms, are recognised and carried at original invoice amount less an allowance for any uncollectible amounts. An estimate for doubtful debts is made when collection of the full amount is no longer probable. Bad debts are expensed to the income statement when identified.

Cash and cash equivalents

Cash and short-term deposits in the balance sheet comprise cash at bank and in hand and short-term deposits with an original maturity of three months or less.

For the purposes of the Cash Flow Statement, cash and cash equivalents consist of cash and cash equivalents as defined above, net of outstanding bank overdrafts.

Interest-bearing loans and borrowings

All loans and borrowings are initially recognised at cost, being the fair value of the consideration received net of issue costs associated with the borrowing.

After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortised cost using the effective interest method. Amortised cost is calculated by taking into account any issue costs, and any discount or premium on settlement.

Gains and losses are recognised in the income statement when the liabilities are derecognised and as well as through the amortisation process.

Provisions

Provisions are recognised when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

Where the Group expects some or all of a provision to be reimbursed, for example under an insurance contract, the reimbursement is recognised as a separate asset but only when the reimbursement is virtually certain. The expense relating to any provision is presented in the income statement net of any reimbursement.

If the effect of the time value of money is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability.

Where discounting is used, the increase in the provision due to the passage of time is recognised as a finance cost.

Leases

Finance leases, which transfer to the Group substantially all the risks and benefits incidental to ownership of the leased item, are capitalised at the inception of the lease at the fair value of the leased property or, if lower, at the present value of the minimum lease payments.

Lease payments are apportioned between the finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are included in the income statement as finance costs.

Capitalised leased assets are depreciated over the shorter of the estimated useful life of the asset and the lease term.

Leases where the lessor retains substantially all the risks and benefits of ownership of the asset are classified as operating leases. Initial direct costs incurred in negotiating an operating lease are added to the carrying amount of the leased asset and recognised over the lease term on the same basis as the lease income.

Operating lease payments are recognised as an expense in the income statement on a straight-line basis over the lease term.

Revenue

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured. The following specific recognition criteria must also be met before revenue is recognised:

Grants

Grants received are recognised in the income statement when the requirements under the grant agreement have being met. Any grants for which the requirements have not been completed are carried as liabilities until all conditions have been fulfilled.

Government grants

Government grants are recognised at their fair value where there is reasonable assurance that the grant will be received and all attaching conditions will be complied with.

When the grant relates to an expense item, it is recognised as income over the periods necessary to match the grant on a systematic basis to the costs that it is intended to compensate.

Where the grant relates to an asset, the fair value is credited to a deferred income account and is released to the income statement over the expected useful life of the relevant asset by equal annual instalments.

Rendering of services

Revenue from research contract services is recognised by reference to the stage of completion. Stage of completion is measured by reference to labour hours incurred to date as a percentage of total estimated labour hours for each contract.

Where the contract outcome cannot be measured reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Interest

Interest income is recognised as the interest accrues (using the effective interest method which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial instrument) to the net carrying amount of the financial asset.

Dividend incomes

Dividend income is recognised when the shareholders' right to receive the payment is established.

Employee benefits

(a) *Bonus plans*
The group recognises a liability and expense for bonuses based on a formula that takes into consideration the profit attributable to the company's shareholder. The group recognises a provision where contractually obliged or where there is a past practice that has created a constructive obligation

(b) *Termination benefits*
Termination benefits are payable when employment is terminated by the group before the normal retirement age or whenever an employee accepts voluntary redundancy in exchange for these benefits. The group recognises termination benefits when it is demonstrably committed to either: terminating the employment of current employees according to a detailed formal plan without possibility of withdrawal: or providing termination benefits as a result of an offer made to encourage voluntary redundancy. Benefits falling due more than 12 months after the balance date are discounted to their present value.

(c) *Long service leave and retiring grants*
Long service leave and retiring grants are payable to employees who were employed by the Department of Scientific and Industrial Research prior to 1 Julty1992. These obligations are valued annually by completion of an independent actuary valuation or by internal valuation.

Income tax

Deferred income tax is provided in full using the liability method on all temporary differences at the balance sheet date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred income tax liabilities is provided in full for all taxable temporary differences

- except if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction effects neither accounting or taxable profit nor loss.
- in respect of taxable temporary differences associated with investments in subsidiaries, associates and interests in joint ventures, except where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred income tax assets are recognised for all deductible temporary differences, carry-forward of unused tax assets and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry-forward of unused tax assets and unused tax losses can be utilised:

The carrying amount of deferred income tax assets is reviewed at each balance sheet date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred income tax asset to be utilised.

Deferred income tax assets and liabilities are measured at the tax rates that are expected to apply to the year when the asset is realised or the liability is settled,

based on tax rates (and tax laws) that have been enacted or substantively enacted at the balance sheet date.

Income tax relating to items recognised directly in equity is recognised in equity and not in the income statement.

Goods and Services Tax

Revenues, expenses and assets are recognised net of the amount of GST except where the GST incurred on a purchase of goods and services is not recoverable from the taxation authority, in which case the GST is recognised as part of the cost of acquisition of the asset or as part of the expense item as applicable; and

Receivables and payables are stated with the amount of GST included.

The net amount of GST recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the balance sheet.

Cash flows are included in the Cash Flow Statement on a gross basis and the GST component of cash flows arising from investing and financing activities, which is recoverable from, or payable to, the taxation authority, are classified as operating cash flows.

Commitments and contingencies are disclosed net of the amount of GST recoverable from, or payable to, the taxation authority.

De-recognition of financial instruments

The de-recognition of a financial instrument takes place when the Group no longer controls the contractual rights that comprise the financial instrument, which is normally the case when the instrument is sold, or all the cash flows attributable to the instrument are passed through to an independent third party.

Derivative financial instruments

The Group uses derivative financial instruments such as foreign currency contracts and interest rate swaps to hedge its risks associated with interest rate and foreign currency fluctuations. Such derivative financial instruments are stated at fair value.

The fair value of forward exchange contracts is calculated by reference to current forward exchange rates for contracts with similar maturity profiles. The fair value of interest rate swap contracts is determined by reference to market values for similar instruments.

The Group's derivative financial instruments are not designated as hedging instruments for accounting purposes. Accordingly, derivative financial instruments are reported as financial instruments at fair value through the income statement.

Explanation of transition to NZ IFRS

Transition to NZ IFRS

Industrial Research Limited financial statements for the year ended 30 June 2008 are the first financial statements that comply with NZ IFRS. Industrial Research Limited has applied NZ IFRS 1 in preparing these financial statements.

Industrial Research Limited transition date is 1 July 2006. Industrial Research Limited prepared its opening NZ IFRS balance sheet at that date. The reporting date of these financial statements is 30 June 2008. The Industrial Research Limited NZ IFRS adoption date is 1 July 2007.

In preparing these consolidated financial statements in accordance with NZ IFRS 1. Industrial Research Limited has applied the mandatory exceptions and certain optional exemptions from full retrospective application of NZ IFRS.

Exemptions from full retrospective application elected by Industrial Research Limited

Industrial Research Limited has elected to apply the following optional exemptions from full retrospective application:

A Business combinations exemption

Industrial Research Limited has applied the business combinations exemption in NZ IFRS 1. It has not restated business combinations that took place prior to 1 July 2006 transition date.

Industrial Research Limited is required to make the following mandatory exception from retrospective application

A Estimates exception

Estimates under NZ IFRS at 1 July 2006 are consistent with estimates made for the same date under previous NZ GAAP.

APPENDIX 2 – CAPABILITY FUND

A. Existing Capabilities [maintain and enhance]

Capability	*Areas of activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
1. Maintain and develop an internationally recognised energy conversion capability in **advanced clean energy technologies** relevant to the New Zealand energy infrastructure to support its transformation to sustainability.	(a) Understand and fabricate new electrochemical electrode materials for solid state energy conversion and identify models for network transformation.	No in-house electrochemical expertise to progress this concept further at this stage. Substantial opportunity as one of the two major methods of hydrogen production in New Zealand (electrolysis) and use (fuel cells). May be developed further if the very promising IRL electrolyser prototype is successful.	If the electrolyser prototype is successful we will consider allocating sufficient funding for a student project at a New Zealand University to take forward the existing ideas and investigate electroless coating of Ni nanoparticles onto the active surfaces of the metal foam electrodes currently being prototyped.	Evaluate the use of the electrode concept for use in high durability regenerative fuel cells by addition of different catalytic materials to lower the electrode overpotentials.
	(b) Understand the processing performance of various nanostructure sorbents and filter materials for syngas processing at two scales i) Capture of CO2 as a by-product.of energy use ii) processing of ethanol in fuel cell systems.	i) Pursue other sources of funding in conjunction with capturing substantial commercialisation investment from industry ii) Our longer term strategy is to collaborate internationally on producing a fuel cell compatible fuel processor suited to low grade (hydrated) ethanol which could be produced from many New Zealand biological feedstocks.	i) Continued development and upscaling of technology, continuation of patenting process and securing of investment from local or international industry partners. ii) Continue to develop IP and know how associated with clean energy production from these renewable fuel resources.	i) Materials research to underpin pilot scale commercialisation, improving cycling capacity, assessment of variability of local resource materials ii) Materials processing, fabrication, and durability research to underpin commercialisation of an ethanol fuel processor
2. Enhance nationally recognised capability in **supercritical fluid extraction,** to support the NZ biotechnology sector.	New developments in SCFE through convergence with capability in bioactives from natural products, and advanced bioprocessing technologies.			

Capability	*Areas of activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
	(a) new applications of supercritical fluids	Seek FRST funding for engineered particles, continue development programs	Transfer engineered particles to FRST funding; continue biofuels development program	Continue biofuels development program, investigate new project concepts
	(b) bioactives from primary products	Secure industry investment, and continue development programs	Seek commercialisation partners for wound healing and anti-inflammatory products, continue nutraceutical development	Continue nutraceutical development, seek commercialisation partners, and apply for FRST TTW funding for fungi project
	(c) advanced bioprocessing technologies	Secure collaborative research agreement with Cawthron, secure further industry investment, continue development	Continue development of all three projects and seek further investment	Continue development of all three projects and seek further investment
3. Enhance internationally recognised capability in carbohydrate chemistry, to support NZ and international biotechnology sectors.	(a) Understand and synthesize new glycolipids for the therapeutic modulation of the immune system.	Development of a joint research group (under an agreed Memorandum of Understanding) between NZ collaborators. Secure co-funding for pre-clinical studies. Secure successful FRST contract to underpin the development steps. Continue to develop measurable, internationally competitive capability in analytical methods for bioactive glyco-compounds Progress successful pilot projects to second phase of funding	Development of an investigational new drug (IND) package. Secure research funding for new product developments based on the knowledge of bioactive heparan sulfate structure. Secure research funding for new product developments based on success in second phase funding	Bring new glycolipid product into development phase Support the new multidisciplinary project initiative in glycobiology established in 2009/10
	(b) Analytical method development for bioactive glyco-compounds			Introduce on new analytical technique relevant to bioactive glyco-compound characterization

Capability	*Areas of activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
	(c) Develop young scientists through opportunities to conduct research on their own novel concepts in the area of drug discovery			Support key X-ray crystallography expert and NZ involvement with Australian Synchrotron Secure research funding for new product developments based on success in second phase funding Progress successful pilot projects to second phase of funding Initiate a further 2-3 new concepts
4. Maintain and grow capability in smart materials design and performance. This is integral to retaining key materials engineering expertise to support NZ's advanced engineering sectors including, aerospace, manufacturing, marine and building infrastructure.	Development of capability in computational modelling and testing of composite structure performance and acoustic control systems.	Continue capability building and step change in materials durability assessment and development of intelligent response systems. Strengthen engagement with industry partners and in particular establish relationships which will guide commercialisation of technology.	Consolidate capability in materials durability assessment and intelligent response systems based on super resolution imaging concepts. Consolidate relationships with industry particularly with Quest and Air NZ and explore research funding from other sources eg. TBG or SBIR (US funding) Develop research collaborations with at least one other international group working in this area.	Build on super resolution imaging concepts and trial ideas on NDT materials assessment. Secure industry investment. Explore extension of super resolution imaging concepts into medical technologies.

B. New and Emerging Capabilities

Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
1. Develop an internationally recognised **materials science niche in hydrogen** storage and generation, to support the emerging New Zealand hydrogen energy sector.	(a) Understand the process chemistry for hydrogen separation.	International collaboration with Imperial College.	Technology demonstration. Secure industry investment.	Long term FRST funded hydrogen materials separation systems Technology demonstration. Secure industry investment. Plan for new/extended materials/energy FRST programme building on ceramic nanoscience
	(b) Synthesise new and nanostructured materials with high hydrogen storage capacity.	Long term FRST funded hydrogen materials research on storage and generation systems.	Continued research in NERF programme.	Continued research in FRST NERF programme. (ii) Demonstration metal hydride storage device at lab scale.

Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
2. Magnet, coil and power systems equipment design in high temperature superconductor (HTS) technology. i. High field magnet design exploiting the characteristics of YBCO wire, by developing a high field YBCO coil to be tested at low temperatures and in high background fields. $70k ii. Understanding the performance of HTS coils under extreme rotational forces, by spin test the HTS rotor built by IRL and HTS-110. $25 iii. HTS power systems equipment design, by contributing to an initial risk reduction project as a prelude to building a 1MVA prototype transformer. $30k.	i. Scoping design study to identify major risks in undertaken a full design and fabrication. Purchase wire to fabricate HTS test coil ii. Undertaken in association with HTS-110, LEI and US-based rotating machine testing team 'spin tests' on HTS coils fabricated by HTS-110. iii. Develop a project plan for two graduate student (ME & PhD) programmes at the University of Canterbury to contribute to the HTS transformer risk reduction project	iv. If scoping study successful and funding available then undertake a full design and fabrication of a high field magnet. v. If successful then undertake appropriate activities to form a partnership to commercialise the technology vi. ME & PhD programmes at the University of Canterbury continue to support HTS transformer project.	Develop other areas of capability.	Based on the underlying science developed in earlier years build capability so as to grow the HTS value chain accessible to NZ manufacturers. The focus will be HTS scientific and industrial magnets, HTS based medical devices and HTS electric power systems
3. Develop an internationally recognised capability in **microfluidics** to support the emerging New Zealand nanotechnology sector.	(a) Fluid flow modelling at the nano and micro scales (b) Microfluidic device construction (c) Microfluidic device design	Exploratory work on miniaturisation of microfluidic devices. Understanding of slip between fluid and solid boundaries. Nano-fluidics.	Deliver a design of a miniaturised activation device to Australo. Strengthen international networks and interactions.	Establish a national facility of expertise, available to NZ researchers and NZ industry, in MicroFabrication.

Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
4. Develop world class capability in **advanced organic materials for photonic** technology, to develop new photonic devices.	Explore methods to make higher performance photonic materials (chiral). Validate theoretical model for doing this.	Secure Industry support for a FRST project. Secure industry co-funding. Undertake NERF funded research into the development of materials for THz generation. If funding not secured do underpinning research to support this for a future proposal using capability funding. Undertake research into new photorefractive materials for development of permanent Bragg gratings for optical and electrical switching.	Undertake research into new photorefractive materials for development of permanent Bragg gratings for optical and electrical switching. Look at research into "small metallic spheres" for photorefractive effects. Undertake research into chi(3) nonlinear materials	Investigate designs and materials for chemical sensors. Research nonlinear materials and processes for fast optical switching. Demonstration of wavelength conversion using 2nd or 3rd order nonlinear optical processes.
5. Develop world class capability in **imaging and detecting** technology for medical applications, to underpin the New Zealand medical devices industry.	Imaging of surface and sub-surface matrix of tissue based on optics and ultrasound technologies; and enhance sensor development for molecular diagnostics.	Continue step change of IRL's imaging capability into high value innovation led manufacturing sectors, in particular medical devices. Early engagement with potential industry partners to guide research. First devices into clinical trials.	IRL's imaging capability for medical applications is established in New Zealand. Extend optical and ultrasound imaging work to disease detection through skin properties eg. osteoporosis in conjunction with ABI. Secure HRC programme to progress clinical applications of surface and sub-surface tissue imaging.	Continue optical and ultrasound disease detection programs on skin and soft tissue imaging. Extended 1st phase clinical trials for optical imaging device if relevant. Continue rapid screening diagnostics initiative into 2nd year. Consolidate partnership with CCREP, Manukau Counties DHB. Secure industry investment for technologies developed, in particular laser speckle.

Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
6. Develop capability in **assistive medical science**, from the convergence of existing capability in vibration science, human motion measurement and control and Biomechanical modelling.	Further develop knowledge of human interface issues arising from use of assistive devices and systems in physical therapy and rehabilitation. The complex interaction between device, therapist and patient needs to be well understood in order to develop effective solutions.	Transfer of technology to NZ manufacturer/distributor. Clinical trials carried out with our health research focussed partners. International collaboration	Develop capability in other areas of assistive medical science.	Develop first prototype products used for validation of VR in the therapy of upper limb rehabilitation. Carry out clinical trials to validate benefits and efficacy. Incorporate EAP's into proof of concept device
7. Develop capability in ICT, including creative and strategic research initiatives.	(a) Creation of computer game content (b) Development of IP Cores (c) Development of ICT strategy	Computer Game Content – Improve pipeline of scanned objects (complexity) and quality of data for game content use. Initiate software development for producing game content from Scene Scanner data. Validate idea with Media Design School and other potential industry partners who will require such software. IP Cores – Complete WiMax baseband processor design as first IP Core project. Identify other commercial opportunities with i2M. ICT Strategy – Complete ICT strategy. Results to be made available to FRST, research collaborators and industry.	Computer Game Content – Produce commercial software for producing game content creation from Scene Scanner data. Engagement with NZ computer games industry strengthened. Identify potential new RFI project in this sector. IP Cores – Stand alone capability by July 2009. Capability will be available to IRL projects and industry. ICT Strategy – Further 4 year funding for NERF programme confirmed with delivery of ICT strategy to FRST.	Initiate fundamental concept research supporting new RFI project in Games Content Creation in preparation of FRST funding/secure industry investment. Project in IP Cores completed. ICT Strategy – Completed programme.

C. Over the Horizon [Discovery and creative insight activity]

Potential Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
1. New fundamental science in redefining the SI (International System) Quantum Limits	A major redefinition of the SI is anticipated in 2011, basing all measurements on a small set of fixed fundamental constants. Opportunity for NZ to contribute to this change.	Investigate research opportunities for the Watt balance approach to linking the kilogram to the Planck constant via quantum electrical standards. Complete microscopic theory for electron transport in quantum dots and carbon nanotubes. Strengthen international science linkages.	Take selected research opportunities further, including experimental design for Planck constant measurement. Engage with potential collaborators. Develop microscopic theory for other possible materials that offer promise in single electron metrology.	Gather and analyse experimental data. Review for impact on SI definitions in context of global progress. Focus research on most promising candidate for realizing SI quantum current definition.
2. Develop new internationally leading capability in new materials for spintronics	Research the control of electron spin, which will enable major technical advantages in device sensitivity and cost.	Ongoing research in NERF programme.		Continue to build a multi-organisation capability to design and fabricate spintronic devices for the NZ electronics industry.
3. Basic **Mathematical Modelling** research for evaluating and optimising properties of advanced materials.	Research on density functional theory, advanced techniques in mathematical modelling.	Develop leading edge skills in quantum mechanics, molecular dynamics, Monte Carlo methods, and apply these to acquire new knowledge of novel materials and fundamental processes, especially relating to emerging industries in the Industrial sector.	Provide design and characterisation predictions which assist the start up of a new nano company. Strengthen international interactions.	Establish a national platform of excellence in mathematical modelling.
Separation and purification of high purity gases for energy and industrial applications and environmental management	Synthesise new and nanostructured materials with high oxygen or carbon dioxide separation and purification capacity.	Preliminary expts undertaken using investment from B1(a).	Build on investment B1(a) to fabricate nanostructured ceramic *oxygen* separation membrane.	Build on investment B1(a) to fabricate nanostructured ceramic *carbon dioxide* separation membrane.

Potential Capability	*Areas of Activity*	*2008/09 Forecast*	*2009/10 Forecast*	*2010/11 Forecast*
Advanced Photovoltaic materials and systems for new energy systems	Integration of QDots, substrate development, conducting films and photocatalysis development	Seed new initiative under FRST QDots-PV programme with CF support.	Develop FRST bid to build on FRST QDots-PV programme (terminating Sept 09)	New FRST funded research in Advanced Photovoltaic materials for new energy systems

APPENDIX 3: Board and Management

Directors:

Dr Brian Rhoades (Chair)
Mr Craig Stobo (Deputy chair)
Ms Anita Mazzoleni (until 30 June 2008)
Dr Ian Parton
Mr David Henry
Mr Michael Ahie
Ms Maxine Simmons

Executive Management Team:

Professor Shaun Coffey - Chief Executive
Dr Suki Siriwardena - GM BD and Commercialisation
Dr Barry Marlow - GM Science and Technology
Mr George McIrvine - GM Corporate Services
Mr Jeff Lycett - Company Secretary